

**REMARKS/ARGUMENTS**

Claims 13 and 27 have been amended by this Response. Claims 1-12 and 20-26 have been previously withdrawn. Claims 13-19 and 27-32 are currently pending in this application, and are at issue herein.

**Allowable Subject Matter**

The Examiner has objected to claims 18 and 32 as being dependent upon a rejected base claim, but has indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank the Examiner for this notification. However, based on at least the arguments submitted below, Applicants believe claims 13-19 and 27-32 are allowable in their present form, and have therefore elected not to rewrite the objected to claims in independent form at this time.

**§ 102 Claim Rejections**

Claims 13-17, 19 and 27-31 stand rejected under § 102(e) as anticipated by U.S. Publication No. 2001/0006744 to Saito ("Saito"). Applicants respectfully traverse the claim rejections for at least the following reasons.

Independent claim 13, as amended, recites a magnetic recording disc for magnetic recording, including:

- a disc substrate having a locking pattern formed therein, the locking pattern comprising a plurality of pits formed in the disc substrate;
- a plurality of nanoparticles completely filling the plurality of pits and exhibiting short-range order characteristics, wherein each individual pit includes a plurality of nanoparticles therein; and
- wherein the locking pattern is formed in accordance with a self-assembly-coherence length scale of the plurality of nanoparticles.

Similarly, independent claim 27, as amended, recites a data storage medium for magnetic recording, including:

- a substrate having a locking pattern formed therein, the locking pattern comprising a plurality of pits formed in the substrate;
- a plurality of nanoparticles completely filling the plurality of pits and exhibiting short-range order characteristics, wherein each individual pit includes a plurality of nanoparticles therein; and
- wherein the locking pattern is formed in accordance with a self-assembly-coherence length scale of the plurality of nanoparticles.

Saito does not disclose or suggest the above-identified limitations.

Saito discloses a magnetic recording medium including a non-magnetic substrate (1), an under layer (2), a magnetic layer (3) and a protective layer (4). (Saito, pg. 3, para. [0042]). The magnetic layer (3) includes a magnetic component (5) evenly spaced apart by an isolating component (6). (Saito, pg. 3, para. [0043] and Figs. 2-5). The magnetic component (5) of Saito is a two-layer structure, including a soft magnetic layer (7) and a hard magnetic layer (8). (Saito, pg. 3, para. [0044]). Figs. 2-5 of Saito illustrate the various structural orientations of the soft (7) and hard (8) magnetic layers as they fill the spaces between the isolating components (6).

The soft (7) and hard (8) magnetic layers of Saito are formed over the entire surface of the medium using magnetron sputtering or electron-beam deposition. (Saito, pg. 4, para. [0059]). Saito teaches that the combined thickness of the soft (7) and hard (8) magnetic layers should exceed the thickness of the isolating component (6), and then the upper surface of the medium is polished to completely remove unwanted layers atop the isolating components (6) and produce a smooth top surface. (Saito, pg. 4, paras. [0056]-[0061] and Figs. 8(a)-(e)).

Saito is totally devoid of any teaching or suggestion of a relationship between a locking pattern and a plurality of nanoparticles filling the locking pattern. The isolating components (6) of Saito define spaces into which the soft (7) and hard (8) magnetic layers are deposited.

However, Saito does not teach or suggest any relationship between the isolating components (6), or the spaces defined by the isolating components (6), and the soft (7) and hard (8) magnetic layers deposited into the spaces defined by the isolating components (6). All Saito teaches is that the soft (7) and hard (8) magnetic layers are deposited such that they completely fill the spaces between the isolating components (6).

In contrast, independent claims 13 and 27 each recite that "*the locking pattern is formed in accordance with a self-assembly-coherence length scale of the plurality of nanoparticles*". Forming the locking pattern in accordance with the self-assembly-coherence length scale of the nanoparticles permits the nanoparticles to self-assemble therein. The soft (7) and hard (8) magnetic layers of Saito are formed as films on the surface of the under layer (2), and Saito simply discloses to fill the spaces defined by the isolating components (6) with the magnetic layers. (See, e.g., Saito, pg. 4, para. [0062]). Saito includes no disclosure or suggestion of any type of "self-assembly" of the magnetic layers (7) and (8). Since Saito is not concerned with the self assembly of nanoparticles, it follows that Saito is devoid of any teaching or suggestion of a relationship between the pattern defined by the isolating components (6) and the magnetic layers (7) and (8) filling the pattern. Independent claims 13 and 27 recite a specific relationship between the locking pattern and the nanoparticles filling the locking pattern, and Saito includes no teaching or suggestion of this claimed relationship.

Irrespective of whether the claimed "nanoparticles" are equivalent to the "films" disclosed in Saito, as the Office Action suggests, Saito is devoid of any teaching or suggestion of any

relationship between the pattern defined by the isolating components (6) and the soft (7) and hard (8) magnetic layers which fill the spaces between the isolating components (6). Saito simply teaches that the spaces between the isolating components (6) are completely filled by the magnetic layers (7) and (8).

Accordingly, for at least the above-identified reasons, Applicants submit that independent claims 13 and 27 are allowable over Saito.

Dependent claims 14-19 and 28-32 depend cognately from independent claims 13 and 27 discussed above, and add features which further remove the present invention from the prior art as recognized by the Examiner in the indication of allowable subject matter in certain of these claims. Given at least the distinctions identified above, the dependent claims are believed allowable over the prior art and a separate discussion of the dependent claims will not be belabored for the sake of brevity.

### **Conclusion**

In summary, Applicants invention is a novel storage medium which includes structural features not found in the prior art. None of the cited art, taken alone or in combination, teaches or suggests Applicants' claimed invention.

Thus, for at least the above-identified reasons, Applicants submit that claims 13-19 and 27-32 are allowable over the prior art of record. Reconsideration of pending claims 13-19 and 27-32, allowance and passage to issue are respectfully requested. Early notification to that effect is respectfully requested.

It is believed that this Response requires no fee. However, if a fee is required for any reason, the Commissioner is hereby authorized to charge Deposit Account No. 02-4553 the necessary amount.

Respectfully submitted,



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